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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,627	07/15/2004	Nicolas Guillarme	026032-4787	4873

7590

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EXAMINER
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KAPLAN, HAL IRA

ART UNIT	PAPER NUMBER
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2836

DATE MAILED: 06/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/501,627

Applicant(s)

GUILLARME ET AL.

Examiner

Hal I. Kaplan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-11,13-21,23-25 and 27-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 30-36 is/are allowed.
- 6) ☒ Claim(s) 1,4,5 and 29 is/are rejected.
- 7) ☒ Claim(s) 3,6-11,13-21,23-25,27 and 28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: See Continuation Sheet.

Continuation of Attachment(s) 6). Other: Examiner-Initiated Interview Summary (PTOL-413B) Paper No(s)/Mail Date 20060526.

### **DETAILED ACTION**

The Examiner wishes to thank the Applicant for the time and courtesies extended in the interview of May 30, 2006 and May 31, 2006.

#### ***Drawings***

1. The drawings were received on April 21, 2006. These drawings are accepted.

#### ***Claim Objections***

2. Claims 7, 17, and 29 are objected to because of the following informalities:  
Claim 7, line 13 contains the phrase "arranged in parallel;". It appears this should be "arranged in parallel; and". Claim 17, line 13 contains the phrase "arranged in parallel;". It appears this should be "arranged in parallel; and". Claim 29, line 9 contains the phrase "arranged in parallel;". It appears this should be "arranged in parallel; and".  
Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 29 is rejected under 35 U.S.C. 102(e) as being anticipated by the US patent of Carpenter et al. (6,275,958).

Carpenter, drawn to fault detection in a redundant power converter, discloses a

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a first electrical network and a second electrical network, the second electrical network having a different voltage than the first electrical network (see column 1, lines 25-28 and Figure 5); a converter comprising a plurality of cells (20) coupling the first electrical network and the second electrical network, the plurality of cells each comprising a DC/DC converter whereby power from the first electrical network may be transferred to the second electrical network through the plurality of cells, the plurality of cells arranged in parallel (see column 2, lines 8-10 and 64-67, and Figure 6); and a means (48,52) for taking a cell of the plurality of cells out of service independently of the other cells (see column 2, lines 45-48).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

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the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1, 4, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over the US patent of Carpenter et al. (6,275,958) in view of the US patent of Hemena et al. (6,160,386), and further in view of the US patent of Mitchell (4,412,277).

As to claim 1, Carpenter, drawn to fault detection in a redundant power converter, discloses, in Figures 5 and 6, a DC/DC voltage converter comprising: a first positive terminal (+Vin) and a first negative terminal (ground) for connection respectively to two terminals of a high-voltage electrical network; a second positive terminal (+Vout) and a second negative terminal (ground) for connection respectively to two terminals of a low-voltage electrical network (see column 1, lines 25-28); and n cells (20) connected in parallel, where n is an integer greater than unity, disposed between the first positive (+Vin) and negative (ground) terminals and between the second positive (+Vout) and negative (ground) terminals, each cell (20) comprising a chopper DC/DC converter (see column 2, lines 8-10 and 64-67, and Figure 6), each having a first circuit branch (ground) interconnecting the first and second negative terminals, a second circuit branch including an inductor (19) and interconnecting the first (+Vin) and second (+Vout) positive terminals, chopper means comprising at least one chopper switch (S1),

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and a management unit (18) adapted to control OFF and ON switching of the chopper switch (S1) with a determined duty ratio (see column 1, lines 37, 46-51, and 60-63, and Figure 6). Carpenter does not disclose only one protection transistor, or the intrinsic diode of the transistor connected to the inductor by its cathode and to the second positive terminal by its anode.

Hemena, drawn to a parallel power system which includes over voltage protection, discloses, in Figure 3B, a DC/DC converter cell comprising a single protection transistor (102) (see column 2, lines 54-55 and column 3, lines 10-13 and 38-44). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to build the DC/DC converter of Carpenter using cells comprising a single protection transistor as taught by Hemena, in order to reduce the number of parts and the cost.

Mitchell, drawn to an AC-DC converter having an improved power factor, discloses a MOS transistor (17) connected in series with an inductor (9), and including an intrinsic diode (21) connected to the inductor by its cathode (see column 2, lines 31-33 and Figure 1). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to use a MOS transistor connected in series between the inductor and second positive terminal of Carpenter, and including an intrinsic diode connected to the inductor by its cathode and to the second positive terminal by its anode, in order to prevent current flow to the load (CPU) when there is supposed to be no load current.

As to claim 4, in the converter of Hemena, the single protection transistor (102) in each cell (100(a)) is connected in a high-voltage portion of the cell (see Figure 3B).

As to claim 5, the protection transistor of Hemena is a MOS transistor (Q2) connected in series in the second circuit branch so as to be immediately adjacent to the first positive terminal (Vin) (see Figure 3B). The converter of Carpenter teaches a MOS protection transistor (48) connected in series in the second circuit branch so as to be immediately adjacent to the first positive terminal (+Vin), with an intrinsic diode connected to the first positive terminal by its cathode (see column 4, lines 48-51 and Figure 5). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to build the converter of Carpenter in view of Hemena, as set forth above, with the MOS protection transistor of Carpenter in place of the MOS protection transistor (102) of Hemena, in order to block an overvoltage resulting from a short of the MOS protection transistor.

***Allowable Subject Matter***

9. Claims 30-36 allowed.
10. Claims 3 and 6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
11. Claims 7-11, 13-21, 23-25, 27, and 28 are objected to because of informalities, as set forth above, but would be allowable if the informalities are corrected.
12. The following is a statement of reasons for the indication of allowable subject matter:



Claims 3, 6-11, 13-16, 18-21, 23-25, 27, and 28 contain allowable subject matter because none of the prior art of record teaches or discloses both a single protection transistor in each cell and a protection switch which is common to all of the cells, in combination with the remaining claimed features.

13. The following is an examiner's statement of reasons for allowance:

Claims 30-36 are allowed because none of the prior art of record discloses the components that are dedicated to a protection function giving rise to static consumption of power less than 0.5% of the total static consumption of the converter, in combination with the remaining claimed features.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Response to Arguments***

14. Applicant's arguments, see Remarks, filed April 21, 2006, with respect to the objections and rejections have been fully considered and are persuasive. The objections and rejections have been overcome and are respectfully withdrawn.

### ***Conclusion***


15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The US patent to Emberty et al. (6,600,238) discloses a similar device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hal I. Kaplan whose telephone number is 571-272-8587. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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